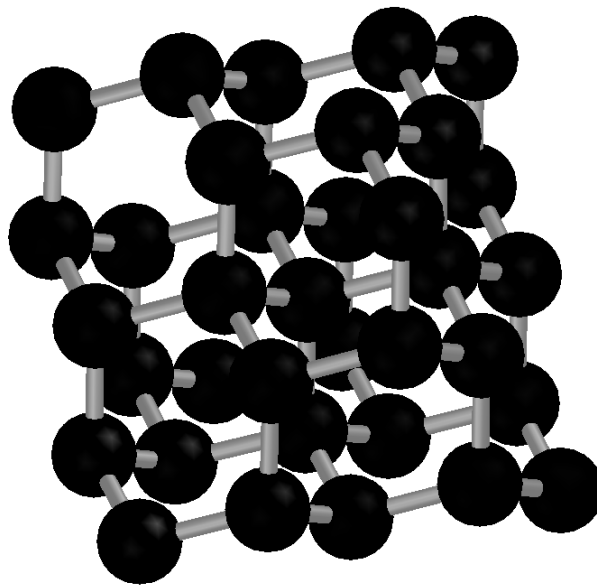


# CH 121

## General Chemistry Spring 2002 Examination 1



**Diamond**

### KEY

**Name:** \_\_\_\_\_  
(please print)

**SSN:** \* \* \* - \* \* - \_\_\_\_\_  
(last 4 digits)

Each question is worth 1 point.  
Circle your answer clearly, otherwise no credit will be given.  
Circle only one answer. If you circle two or more, you will receive no credit.

1. What is the density of a metal if a 15.4 gram sample has a volume of 1.96 cm<sup>3</sup>?  
c. 7.86 g/cm<sup>3</sup>
2. The mass of a sample weighed on an electronic balance that is sensitive  $\pm 0.3$  mg is 1.2300 g. The number of significant figures in this measurement is  
e. 5
3. Which of the following is an example of a chemical change?  
b. natural gas burning
4. How many neutrons are in  ${}_{34}^{79}\text{Se}$ ?  
b. 45
5. An alkaline earth, a chalcogen, and a noble gas in that order are  
b. Ca, O, Ne
6. The density of copper is 8.96 g/cm<sup>3</sup> at room temperature. If a cube of copper weighs 25.0 grams, what is the length of its edge?  
d. 1.41 cm
7. How many grams of magnesium contain the same number of atoms as 20.04 g of calcium?  
a. 12.16 g
8. You have set up an experiment in which you will react mercury with sulfur. If you have 0.64 g of S and 0.64 g of Hg, which statement below best describes the situation?  
b. There are more moles of S than moles of Hg present.
9. The density of a sodium sulfate solution is 1.07 g/cm<sup>3</sup>. The solution is 8.00% sodium sulfate by mass. How many cm<sup>3</sup> of the solution are needed to supply 4.28 g of sodium sulfate?  
e. 50.0 cm<sup>3</sup>

10. The formula of barium molybdate is  $\text{BaMoO}_4$ . Therefore, the formula of sodium molybdate is

d.  $\text{Na}_2\text{MoO}_4$ .

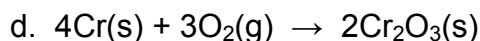
11. Which of the following compounds is 36.4% oxygen by mass?

a.  $\text{N}_2\text{O}$

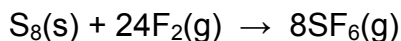
12. Which of the following contains the largest number of molecules: 6.00 g  $\text{CH}_4$ , 9.00 g  $\text{H}_2\text{O}$ , 15.0 g  $\text{NO}_2$ , 11.0 g  $\text{C}_2\text{H}_6$ , or 20.0 g  $\text{C}_2\text{H}_5\text{OH}$ ?

b.  $\text{H}_2\text{O}$

13. The balanced equation for the reaction of chromium with oxygen to give chromium(III) oxide is



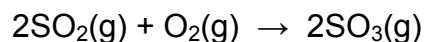
14. The very stable compound  $\text{SF}_6$  is made by burning sulfur in an atmosphere of fluorine.



If you need to make 2.50 moles of  $\text{SF}_6$ , you will need to use

a. 0.313 moles of  $\text{S}_8$  and 7.50 moles of  $\text{F}_2$ .

15. Sulfur trioxide is made from the oxidation of sulfur dioxide and is represented by the equation



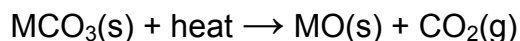
A 16 g sample of  $\text{SO}_2$  gives 18 g of  $\text{SO}_3$ . The **percent yield** of  $\text{SO}_3$  is

d. 90%

16. The molar mass of barium hydroxide octahydrate is

e. 315.48 g/mol.

17. 1.056 g of metal carbonate, containing an unknown metal M, were heated to give the metal oxide and 0.376 g  $\text{CO}_2$ .



What is the identity of the metal M?

b.  $\text{M} = \text{Cu}$

18. The chemical properties of germanium would be most similar to
- c. Si.
19. A 0.105 g sample of the carbon-hydrogen-oxygen compound Quinolin was burned in excess oxygen to form 0.257 g of  $\text{CO}_2$  and 0.035 g of  $\text{H}_2\text{O}$ . What is a possible molecular formula of Quinolin?
- e.  $\text{C}_6\text{H}_4\text{O}_2$
20. Consider a gold coin which is 90.0% gold and 10.0% copper. If the coin has a mass of 2.00 ounces (56.7 g), how many moles of gold are in the coin?
- b. 0.259 mol